NetComm™

Ultra Series
54Mbps Wireless PCI Adapter

User Guide

REGULATORY NOTES AND STATEMENTS

WIRELESS LAN, HEALTH AND AUTHORIZATION FOR USE

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. The energy levels of these emissions however are much less than the electromagnetic energy emissions from other types of wireless devices such as mobile phones. Therefore Wireless LAN devices are generally safe for use according to instructions, however may be restricted in some situations or environments, for example:

- ➢ On board of airplanes
- ➢ In an explosive environment e.g. industrial or mining site
- ➢ In case the interference risk to other devices or services is perceived or identified as harmful.

In case the policy regarding the use of Wireless LAN devices in specific organizations or environments (e.g. airports, hospitals, chemical/oil/gas industrial plants, private buildings etc.) is not clear, please ask for authorization to use these devices prior to operating the equipment in these situations.

REGULATORY INFORMATION/DISCLAIMERS

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment as well as the manufacturer warranty. The Manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, of the substitution or attachment of non-original parts. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

COMPLIANCE WITH ACA STANDARDS

This equipment has been tested and found to comply with the Standards for C-Tick and or A-Tick as set by the Australian Communications Authority (ACA) . These standards are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio noise and, if not installed and used in accordance with the instructions detailed within this manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur with the installation of this product in your home or office. If this equipment does cause some degree of interference to radio or television reception, which can be determined by turning the equipment off and on, we encourage the user to try to correct the interference by one or more of the following measures:

- ➢ Change the direction or relocate the receiving antenna.
- ➢ Increase the separation between this equipment and the receiver.
- ➢ Connect the equipment to an alternate power outlet on a different power circuit from that to which the receiver/TV is connected.
- ➢ Consult an experienced radio/TV technician for help.

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INTRODUCTION

Congratulations on your purchase of the NetComm Ultra Series 54Mbps (IEEE 802.11g) Wireless PCI Adapter. This manual contains detailed instructions in operation of the Adapter. Please keep this manual for future reference.

With a Wireless (IEEE 802.11g) PCI Adapter, a computer can communicate wirelessly with any other similarly-equipped computer. Easy-to-use utilities are bundled with Wireless (IEEE 802.11g) PCI Adapter for configuration, monitoring, and diagnosis purposes.

The Ultra Series can wirelessly transmit and receive data at a speed of up to 54 Megabits per second, eliminating the need for wired connections. With the Wireless PCI Adapter, you can locate your PC or station wherever you want without wires and cables.

Wireless PCI Adapter provides users with an access to real-time information anywhere in their organization. The mobility provides productivity and service, which are not available under wired networks. The Wireless PCI Adapter configuration is easy to change from peer-to-peer networks, suitable for a small number of users, to full infrastructure networks of thousands of users that allow roaming around a broad area.

Overview of this User's Guide

Introduction   Describes the Wireless PCI Adapter.

Unpacking and Setup   Helps you get started with the basic installation of the Wireless PCI Adapter.

Hardware Installation Describes the LED indicators of the Adapter.

Software Installation Tells how to setup the driver and the utility setting.

Technical Specifications Lists the technical (general, physical and environmental) specifications of the Wireless PCI Adapter.

UNPACKING AND SETUP

This chapter provides unpacking and setup information for the Wireless PCI Adapter.

Unpacking

Open the box of the Wireless PCI Adapter and carefully unpack it. The box should contain the following items:

- One Ultra Series 802.11g Wireless PCI Adapter
- One Driver & Utility CD-ROM

If any item is missing or damaged, please return to the reseller for replacement.

Setup

The setup of the Wireless PCI Adapter can be summarised as follows:

- Visually inspect the PCI Adapter and make sure that it is fully plugged in to the PC's PCI slot.
- Make sure that the PC is situated in an environment conducive to wireless networking i.e. remote from sources of interference, large metal objects, thick concrete walls, etc.

DEVICE INSTALLATION

Install the Driver and Wireless Utility for Windows 98, ME, 2000 and XP

1. Insert the Cardbus/PCI Adapter Driver & Utility CD-ROM into your computer's CD-ROM Drive and it will automatically run a setup menu. Click on Install Software to install the driver and the utility.

2. In some specific situations, you may need to install the software manually; if so, go to your Windows Start menu and choose Run, type "D:\Utility\Setup.exe" in the dialog box (D:\ will depend on where your CD-ROM drive is located) and click OK..

3. The Install Shield Wizard screen will appear. Click Next to continue.

4. After software installation has finished, plug in the Cardbus/PCI Adapter. The New Hardware Wizard will then appear. Follow the prompts to complete the installation. You will then see the Wireless Configuration Utility icon on the Windows task bar.

Note that Windows XP has its own Wireless Utility; you can either use the Ultra Series utility or the one provided with Windows.

LED Indicator

LNK/ACT (Link/Activity)
The LNK indicator lights green when the Wireless PCI Adapter is connected to a network successfully. Otherwise the LNK indicator blinks green continuously while the Wireless PCI Adapter is scanning for wireless devices or transmitting data.

On completion of the installation, the Wireless Configuration Utility Country Selector will appear. Select the country where you are using the device. Note that users are responsible for ensuring that the channel-set configuration is in compliance with the regulatory standards of these countries.
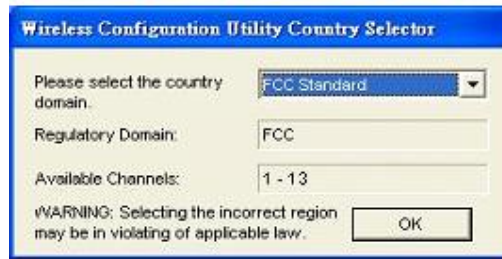
Warning: *Selecting the correct region is a legal requirement as well as a setting required for the device to operate properly.*

5. You will see the icon on the Windows task bar when the Wireless PCI Adapter was ready.

When the icon is green, the device is successfully connected to the WLAN, red indicates no connection present.

Wireless Utility Setting

The Wireless PCI Adapter Utility provides software controls for the device. Double-click the utility icon that appears in the taskbar. The Wireless Monitor Utility includes seven tabs: Status, Configuration, Advanced, Profile, Network, Statistics and About.

Status

The Status screen shows you the status of the Wireless PCI Adapter; the hardware address of the device is connected to; the Network mode; the Channel; the transmit rate; and the encryption mode.
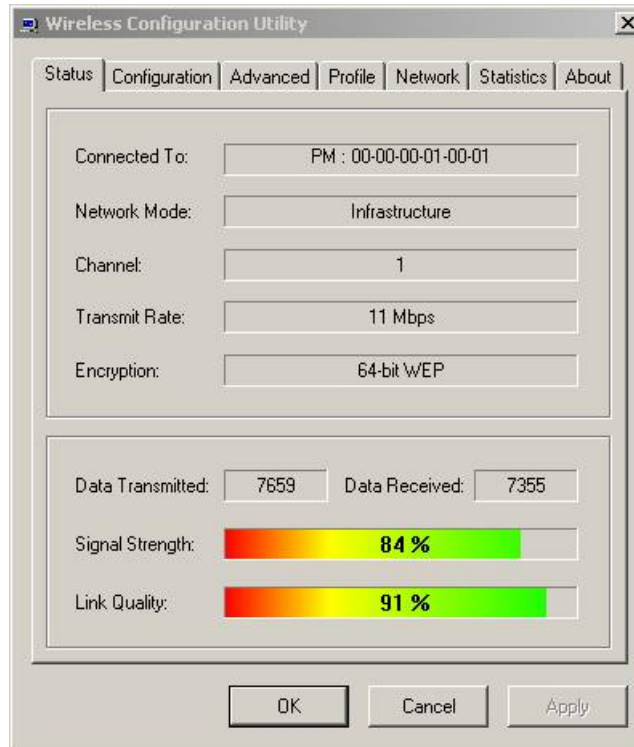
The lower section of the dialog box shows the data transmitted and received; the two signal lines show the Signal Strength and the Link Quality of the device.

Configuration

This screen enables configuration of Network and the Security features:
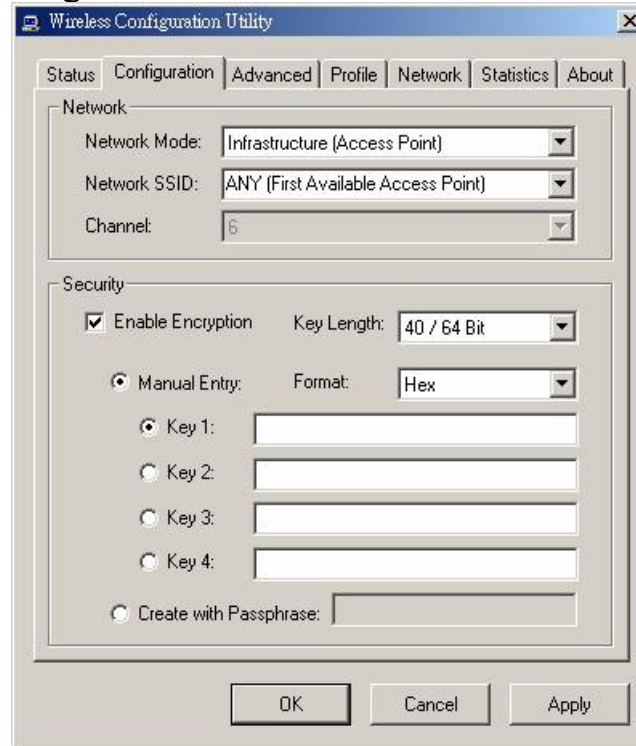
**Network:** the setting of the Network mode, the SSID and the Channels.

➢ Network Mode: If you want to connect with an Access Point, set to "Infrastructure" mode. If you simply wish to enable peer-to-peer networking between workstations, set the mode to "Ad-Hoc".

➢ Network SSID: The SSID differentiates one Wireless LAN group name from another; so all access points and all devices attempting to connect to a specific Wireless LAN group name must use the same SSID. A device will not be permitted to join the WLAN unless it can provide the unique SSID. If the SSID parameter is "ANY", it will detect the strongest signal of any wireless station in proximity.

➢ Channel: Shows radio channel numbers that used for Wireless LAN networking. The channel number can be set only under the Ad-Hoc operation mode. In Ad-Hoc mode stations, each station must have the same channel numbers and SSID. In Infrastructure mode, the Wireless PCI Adapter will auto-detect the Channel Number of the Access Point.

➢ Security: This function is used to protect wireless communication from eavesdroppers and unauthorized access. Check **Enable Encryption** to activate the security of the Wireless PCI Adapter.

➢ Key Setting #1 ~ #4: Enter the 'encryption key' in the fields from Key#1 to Key #4 . The key provides the basis for the encryption between the station(s) or access point(s) that you are connecting to, so the value you enter must be the same as those on the stations or access points. Rules governing the entry of key text are as follows:

- If you select 64bit in Hex format, you must enter 10 characters in the following range (0~F, hexadecimal). If you select 64bit in ASCII format, you must enter 5 characters in the following range (0~9, A~Z and a~z Alphanumeric).

- If you select 128bit in Hex format, you must enter 26 characters in the following range (0~F, hexadecimal). If you select 128bit in ASCII format, you must enter 13 characters in the following range (0~9, A~Z and a~z Alphanumeric).

- If you select 256bit in Hex format, you must enter 58 characters in the following (0~F, hexadecimal). If you select 256bit in ASCII format, you must enter 29 characters in the following range (0~9, A~Z and a~z Alphanumeric).

➢ Create with Passphrase: Entering a passphrase auto-creates a group of WEP keys in the Key Settings fields. Simply input a phrase in the Passphrase dialog, and you will see that the Key Settings fields are auto-generated from this phrase. Entering the same phrase will always generate the same Key Settings. This is an easy way to enter a WEP key

Note: After all the settings are completed, click Apply to save the setting.

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Advanced

The Advanced settings help you to adapt the Ultra Series Wireless PCI Adaptor settings to various network parameters.
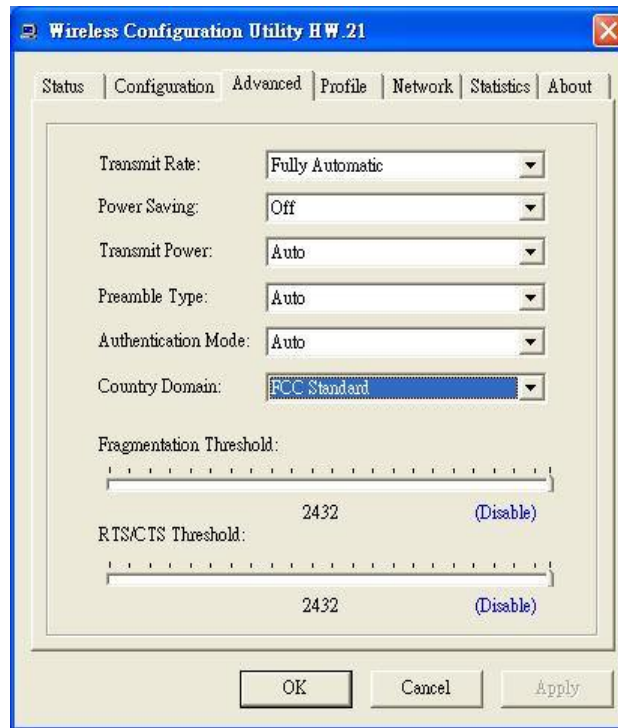
➢ Transmit Rate: You can choose one of the transmission rates as follows, 54Mbps, 48Mbps, 36Mbps, 24Mbps, 22Mbps, 18Mbps, 12Mbps, 11Mbps, 9Mbps, 6Mbps, 5.5Mbps, 2Mbps, 1Mbps, Fully Automatic and Turbo Mode.

In some specific wireless environments, the transmit rate can be set at up to 72Mbps for 802.11g; select the Turbo Mode function to enhance the transfer rate of the wireless connection. The Fully Automatic and Turbo Mode will auto-detect the appropriate linking transfer rate and fall back when the signal is not sufficiently strong to maintain the higher rate.

➢ Power Saving: To set the Wireless PCI Adapter Power Saving mode, select "Off", "Normal" or "Maximum".

➢ Transmit Power: By selecting the Transmit Power, you can select the Radio Frequency output power from Minimum, 12.5%, 25%, 50%,100% or Auto.

➢ Preamble Type: The usage of the preamble is to limit the packet size of the data to transmit. It is recommended to choose the short preamble when the link quality is bad, as it is more efficient in these situations. The Default is Auto which alternates short and long preamble according to conditions.

➢ Authentication Mode:

Open System: If the same WEP key is used between the stations, the stations don't need to be authenticated, leave setting as 'Auto'.

Shared Key: this enables use of a Shared Key between stations to provide for maximum wireless security. Before entering this setting, ensure that all of the workstations involved are able to support the Shared Key method that is selected.

➢ Country Domain: This is the channel selection of each country regulatory domain - select the country where you are using this wireless device. Note that users are responsible for ensuring that the channel set configuration is in compliance with the regulatory standards of the country in which they are situated.

➢ Fragment Threshold: Choose a setting within a range of 256 to 2432. It is recommended to set a lower value when link quality is bad, so as to prevent wasting time by resending a long packet that is lost.

➢ RTS/CTS Threshold: The RTS/CTS Threshold sets Collision Detection parameters. Each station initiates the Send process by sending a RTS frame; the receiver receives the RTS and responds with a CTS frame. The sending station must receive a CTS frame before sending the data frame to avoid network data collisions. Choose a setting within a range of 256 to 2432; a shorter value is recommended to prevent stations waiting too long to transmit data.

Profile

The Profile section allows you to save values for all parameters or, by selecting a previously defined profile, to retrieve a whole set of parameters. The fields in the lower half of the Profile window summarise all of the settings

To create a profile: Type a name in the Profile Name field, click Save and click Apply when a profile is done. You can click Delete if the profile is no longer used; to activate other profile, choose a profile name in the Profile Name field and click Activate.
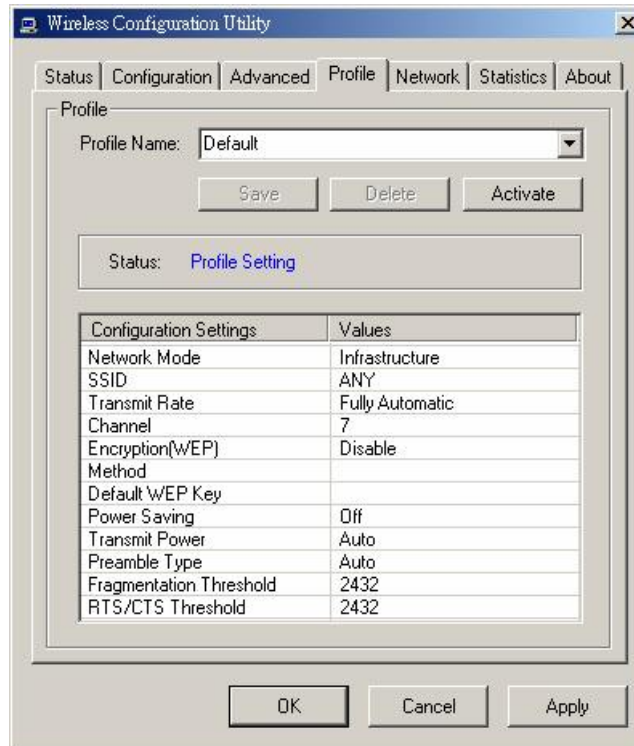
Network

The screen shows all the Wireless devices around your Wireless PCI Adapter. The information of the wireless devices includes the SSID, MAC Address, Channels, Signal, the WEP type and the Network mode.

You can click the Rescan button to find the new wireless devices, and double-click the device to choose the wireless station that you want to connected with.
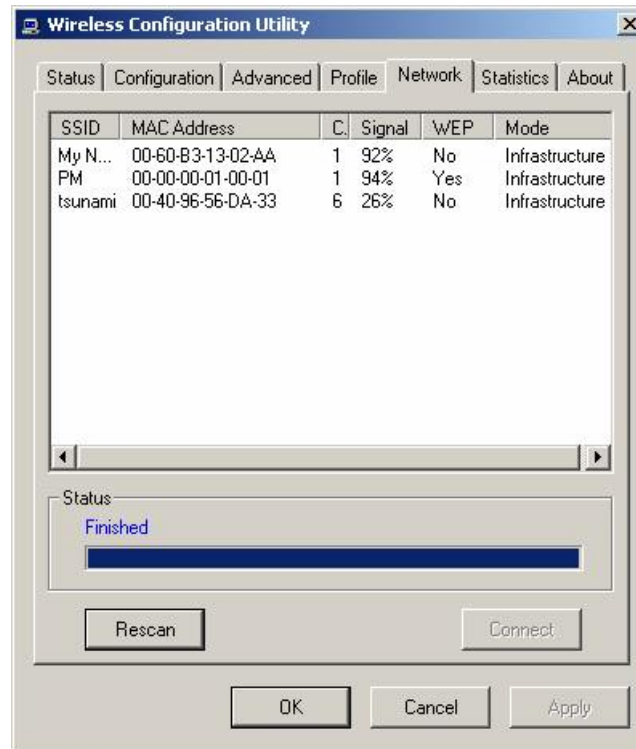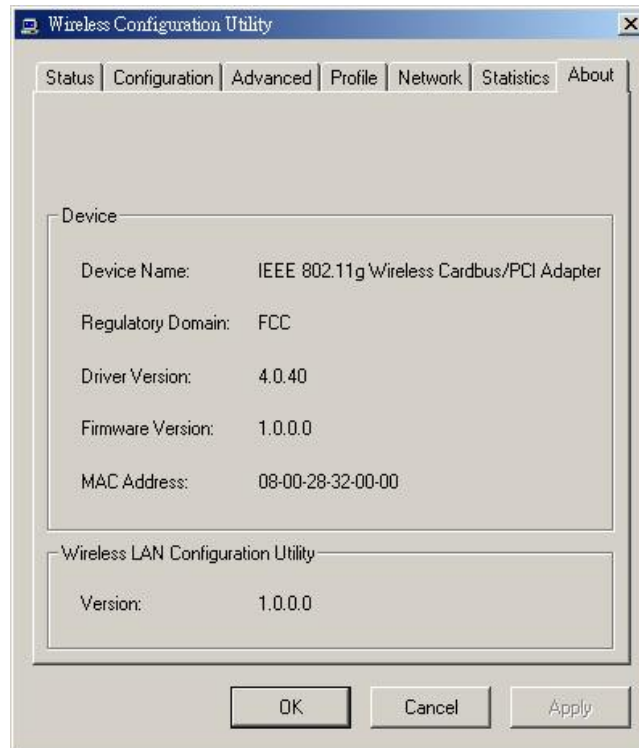
Statistic

The Statistic section shows the real-time transmit and receive packet information for the Wireless PCI Adapter.
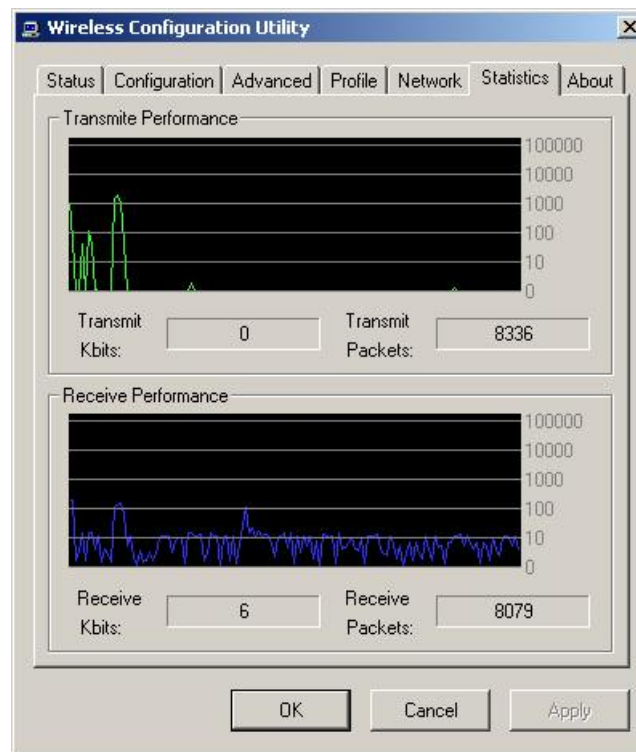
About

The About section shows the Device Name, Regulatory Domain, Driver Version, Firmware Version, MAC Address and the Utility version.

TECHNICAL SPECIFICATIONS

General	
Radio Technology	IEEE 802.11b Direct Sequence Spread Spectrum (DSSS) IEEE 802.11g Orthogonal Frequency Division Multiplexing (OFDM)
Interface	32-bit PCI 2.1, 2.2. Bus Master
Data Transfer Rate	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54Mbps (auto sense)
Receiver Sensitivity	54Mbps: Typical -72dBm @ 8% PER (Packet Error Rate) 11Mbps: Typical -85dBm @ 8% PER (Packet Error Rate)
Transmit Rate	802.11g : 13dBm typically 802.11b : 17dBm typically
Frequency Range	2400 ~ 2497 MHz ISM band (channels 1 ~ 14)
Modulation Schemes	DBPSK/DQPSK/CCK/OFDM
Channels	1~13 channels (Australia)
Media Access Protocol	CSMA/CA with ACK
Security	64/128/256-bits WEP Encryption, WPA
Diagnostic LED	LNK/ACT (Link/Activity status)
Antenna	2 dBi Dipole Antenna
Physical and Environmental	
Driver Support	Windows 98se, Windows 2000, Windows ME, Windows XP
Continuous Current Consumption	480mA typ. for receive mode, 650mA typ. for transmit mode
Temperature	Operating: 0° ~ 40° C, Storage: -25° ~ 70° C
Humidity	10% ~ 95% RH, no condensation
Dimensions	133 x 121 x 21.6 mm (without antenna)
Certifications	FCC Part 15.247 for US, ETS 300 328 for Europe,